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United States Patent [19]

Siwiak

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[54] **APPARATUS FOR MULTI-RATE SIMULCAST COMMUNICATIONS**

[75] Inventor: **Kazimierz Siwiak**, Coral Springs, Fla.

[73] Assignee: **Motorola, Inc.**, Schaumburg, Ill.

[21] Appl. No.: **439,839**

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[51] Int. Cl.^{6} **H04B 7/00**; H04J 1/02; H04J 11/00

[52] U.S. Cl. **370/19**; 370/23; 370/69.1; 370/84; 370/92; 370/110.1; 455/51.2; 455/56.1

[58] Field of Search 370/19, 21, 23, 370/49.5, 50, 60.1, 70, 84, 92, 93, 94.1, 95.1, 95.3, 99, 110.1; 375/260; 340/311.1; 455/15, 16, 51.2, 56.1

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Primary Examiner—Hassan Kizou
Attorney, Agent, or Firm—R. Louis Breeden

[57] **ABSTRACT**

A messaging system (**500**) for transmitting a message to a subscriber unit (**312**). The messaging system (**500**) includes a plurality of geographically distributed messaging transmitters (**302–310**), each transmitter designed to transmit in a first modulation format, such as FM, during a first transmission portion (**102**) including address information; and in a second modulation format, such as OFDM, during a second transmission portion (**104**) including message data (**110**) transmitted in frames. The address information includes message characterization information (**108**) defining a predetermined frame rate. The second transmission portion (**104**) includes message data (**110**) transmitted in frames representing a time sequence of N data bits at the predetermined frame rate and provides a plurality of carrier frequencies related to a frequency domain representation of the time sequence of data bits. The predetermined frame rate numerically matches the predetermined symbol rate. The subscriber unit (**312**) includes circuitry for receiving and demodulating both modulation formats.
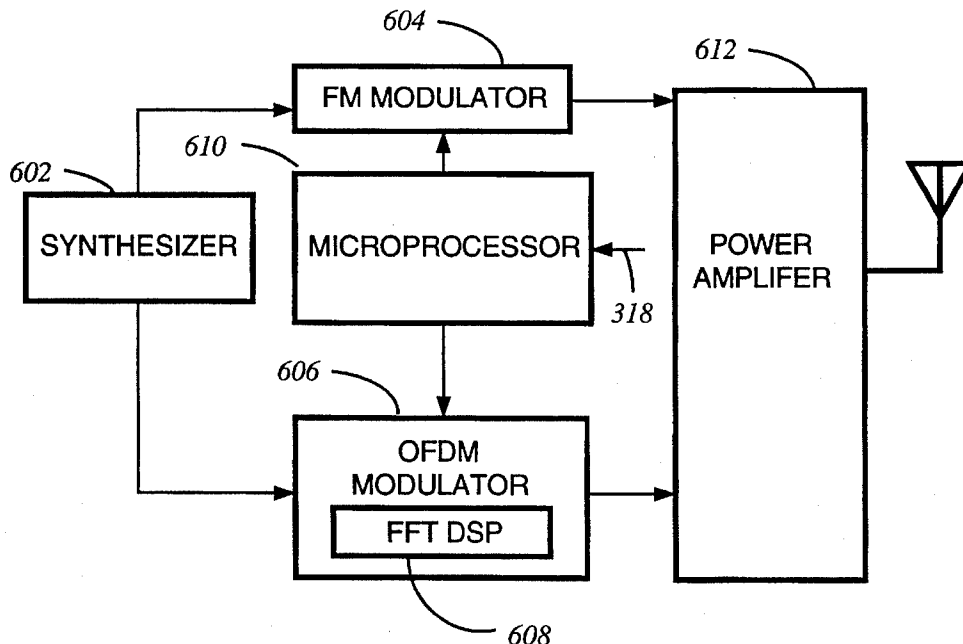
23 Claims, 4 Drawing Sheets

Rembrandt Wireless

FIG. 1
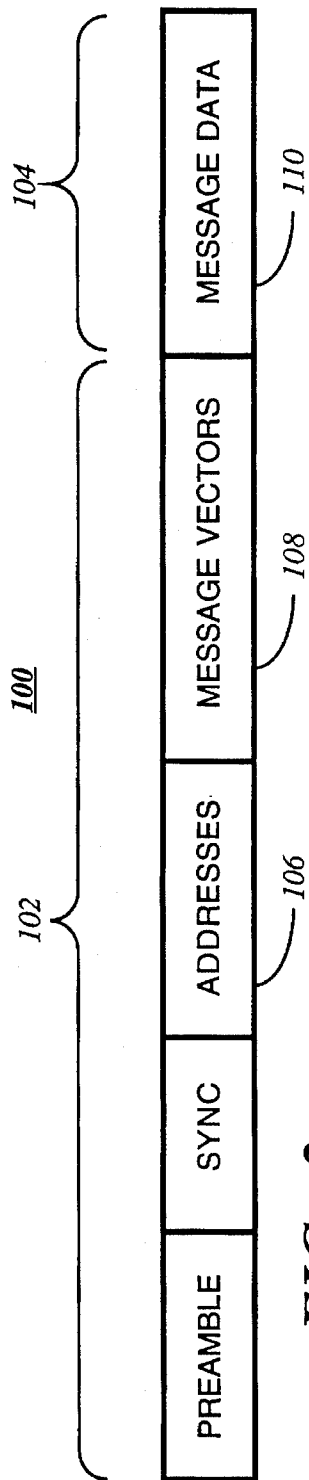
FIG. 2
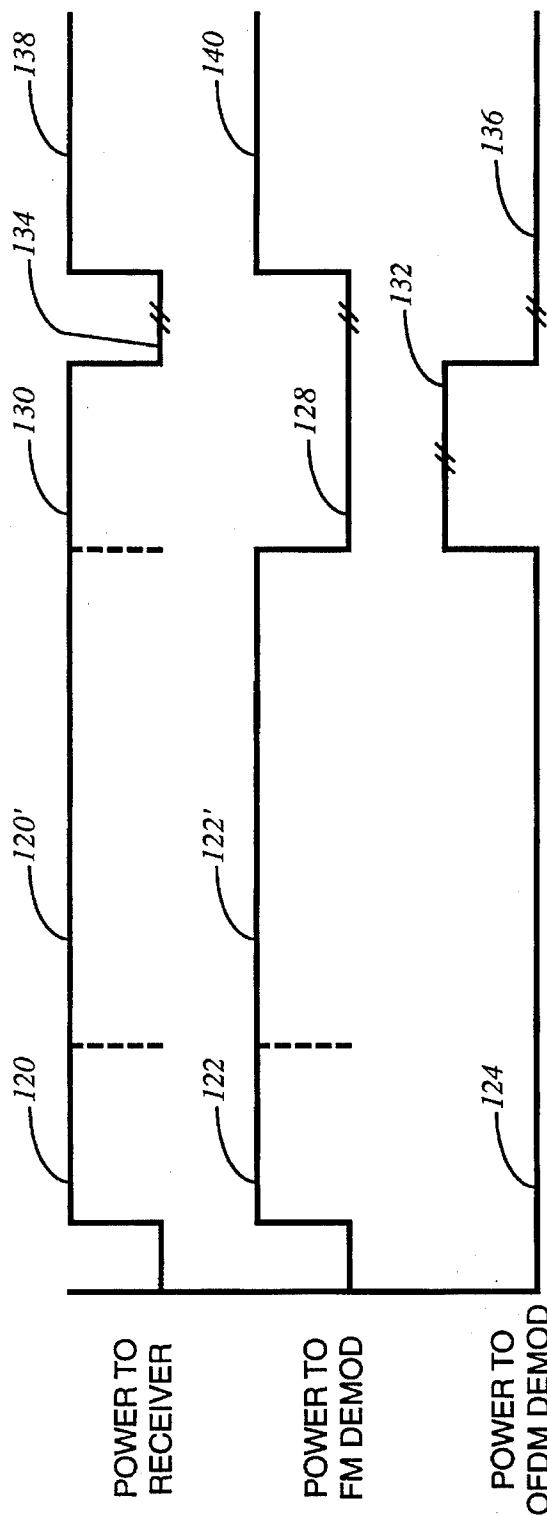
FIG. 3
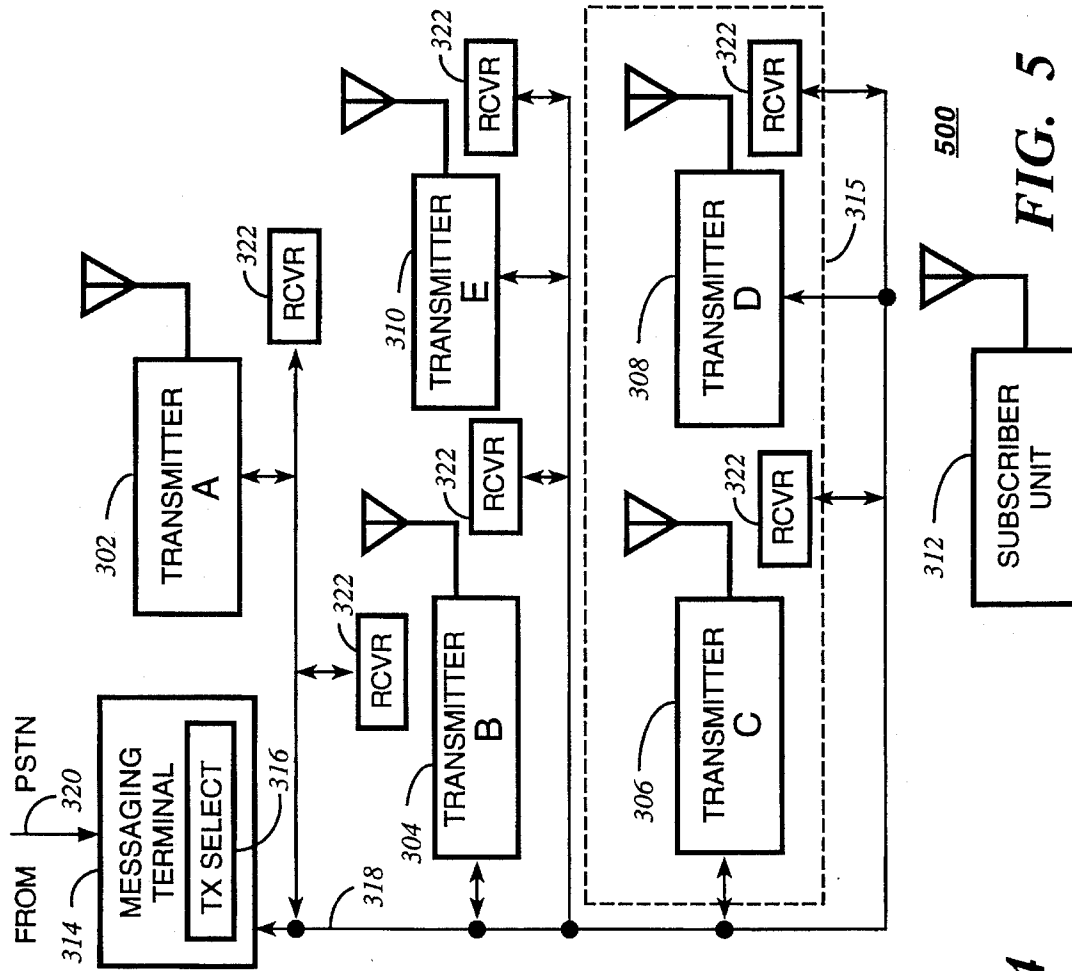
FIG. 5

FIG. 4

FIG. 6

DOCKET ALARM
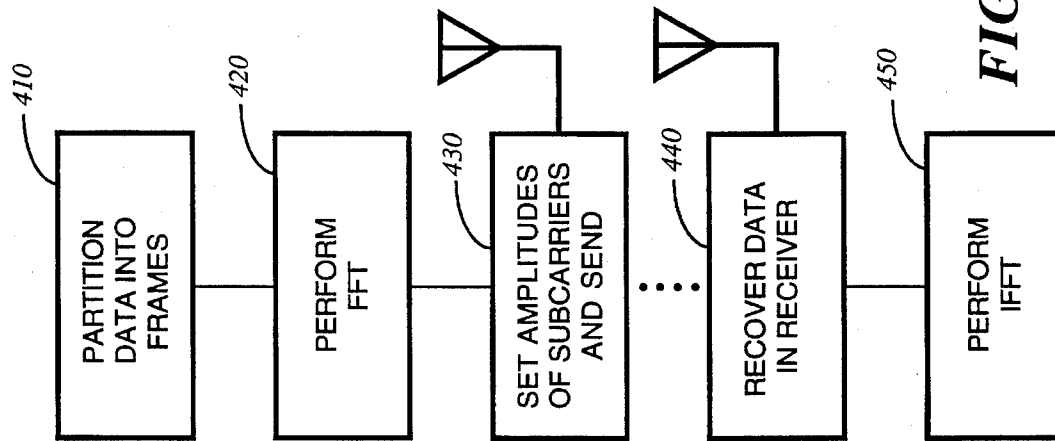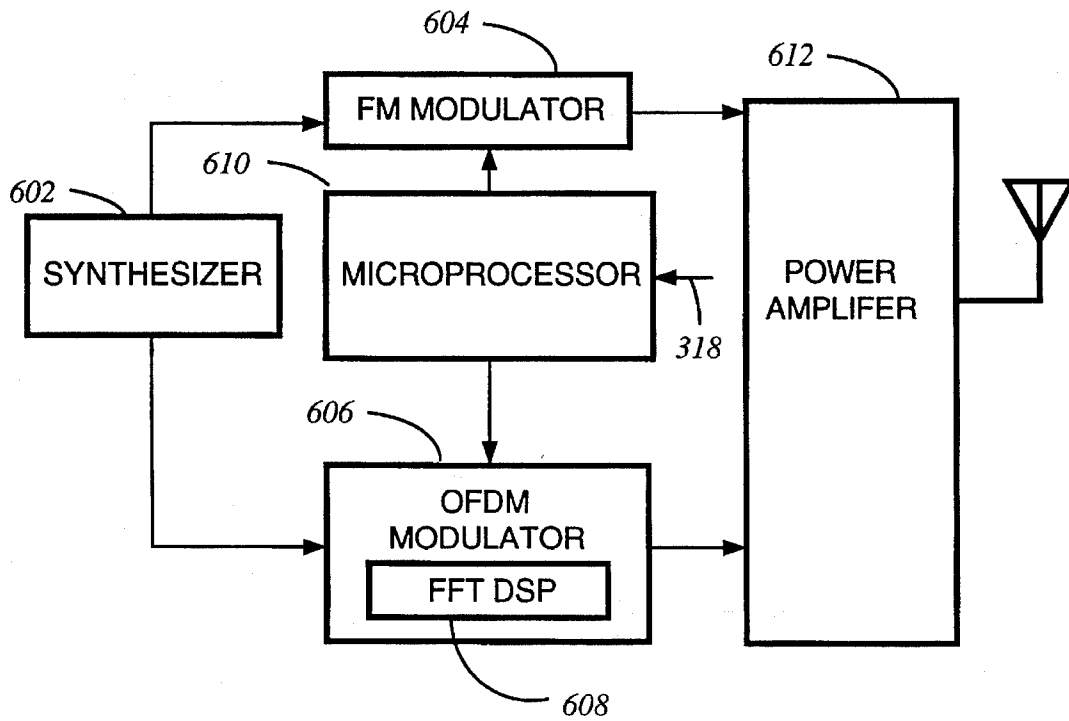
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